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RAILWAY RATE MAKING: DISCUSSION

JOSEPH SCHUMPETER: The contributions which science has to offer as to the subject in hand are reliable and substantial, largely through the work done by American economists, but they seem to consist more in elucidating principles than in prescribing rules for practical action. We have a body of results on which we all agree more or less and which leaves no room for some of the controversies which agitate the popular mind. The making of a railroad tariff is simply a special case of price-fixation in general, in which certain well-known features are more prominent than in other businesses, though they are present everywhere in the industrial field. We understand, for instance, why monopoly gains, which in other businesses are surpluses over what is necessary to call forth the requisite supply, should be necessary elements, to a certain extent, of the normal remuneration of railroad capital; which, once understood, does away with lots of popular prejudices, especially those in favor of a rigid distance tariff. We know that a railroad board in charging "what the traffic will bear" is really only trying to find out the slopes of demand curves experimentally, and why it is that they do not find so safe a practical guide in cost as other business men do, though ultimately cost plays much the same role in this as in other fields. If we pay proper attention to the theory of limited or imperfect competition and that of joint cost, and if we try to work out demand schedules for railroad services on the one hand, and to perfect cost accounting on the other, we shall finally be able to treat concrete cases and to render some practical service to the business man. But there seems to be less prospect of getting new light by an evaluation of the property of a railroad. For, if we take the original cost of getting it or its value for other uses, neither of these two sums would have any bearing on the problem. If we take the value of the different items as parts of a going concern, their value will entirely depend on the earnings, to which they contribute, and therefore not tell us much about whether these are high or low.

It is a pity that the principles of tariff making should be so little understood by the public at large. As it is, we are confronted with popular opinions which probably will have their way. This makes it difficult, for instance, to fight by legislative or administrative measures precisely those kinds of discrimination that are dictated not by the interest of the roads as such, but by the

business interests with which they may be allied and still leave alone those cases of discrimination, which are as essential for the roads as are the wheels of their cars. It also makes it difficult to confine government influence on tariffs to those important if not too frequent cases in which a great benefit to customers can be conferred at small expense to the roads. Although the system of private ownership and management of railroads combined with state control is probably the most satisfactory yet hit upon, it seems a timely thing to sound a note of warning. Even the most necessary amount of control tends to fossilize the existing railroads and to slow down the rate of progress. And whatever complaints there may be about the tariff policy of the roads, the public should not be allowed to lose sight of the fact that, partly at least, they owe to it the most splendid railroad system and the most efficient service the world has seen so far.

ALLYN A. YOUNG: I am deeply impressed by the fact that Commissioner Meyer has come through nine years of discipline in handling actual rate cases with what seem to be a strengthened conviction that while there is no single "yardstick" by which to measure the reasonableness of rates, yet there are, nevertheless, a few principles of rate regulation that are of fundamental importance.

I suspect that in these days many of us would subscribe to the creed that the amount of the investment, the cost of the service, and public policy are the fundamental things in rate control. But it is a rather humiliating thing for us to have to confess that in so doing we merely follow the lead of the commissions and courts and of men active in public life. Until recent years orthodox rate theory has been little more than an exposition of actual rate practices and an apology for them.

The thesis in Commissioner Meyer's paper about which difference of opinion is most likely is that the cost of each particular railway service should be ascertained as accurately as possible and should be utilized as one of the fundamental factors of rate making. It is this thesis which I wish to discuss, and I shall limit myself to a review of the grounds on which some of those who believe in the soundness of the cost principle rest their case.

I believe that the case rests upon the same fundamental principles as does the case for free trade. It is a false laissez-faire that would permit the railroad to lay down the rules of the game;

to make or unmake the prosperity of one region or another; or even to equalize the productive or commercial disadvantages of different cities or different sections of the country. A true laissez-faire would endeavour to so utilize a rigid control of railway rates as to secure the advantages of a broader competition in the industrial field, and especially to secure the economies that are bound up with the law of comparative costs.

To make the point clear, assume, for a moment, that all transportation costs are separable or variable costs; that is, that all the items of transportation expense vary with the traffic, so that every added ton mile of traffic increases the total expense by a constant amount. That under these conditions, particular considerations of public policy aside, rates should be based on costs does not seem to me to be even a debatable question. Rates proportioned to costs would secure the most advantageous distribution of industrial undertakings. They would lead, not necessarily to a minimum of transportation but to a minimum of aggregate productive and distributive costs for a given national dividend. It is true that certain writers, most recently Professor Edgeworth and Professor Pigou, have tried to show that under conditions hardly realizable in practice certain particular sorts of rate discrimination might possibly be more advantageous, economically speaking, than rates based on cost. I haven't the time to traverse that argument, nor is it necessary in order to prove the cost system superior to any sort of discriminatory rates which could possibly be put into actual practice. With all railroad costs variable costs, the cost principle of rates becomes, I think, generally conceded.

Imagine, now, that all transportation costs are fixed costs; that an indefinite increase of traffic would not increase in any way the aggregate expenditures of the railroads. That is, railway plant and equipment and all operating expenses would be *given factors*. It could easily be shown, of course, that under such conditions a discriminating rate system, based on what the traffic would bear, would be the most advantageous.

Now the facts as to railway expenditures involve elements that are found in both these extreme cases, although I am inclined to think that the first of these two imaginary conditions is somewhat nearer to actual conditions than is the second.

"But," say the opponents of the cost principle, "surely you will acknowledge that because railroad costs are in part fixed and

established it is not only good business but it is also socially desirable that the railroad should take on traffic which would not move at higher rates, so long as the rates cover the additional costs actually created by the traffic in question?" To this I should reply that this theory, with its implicit justification of "charging what the traffic will bear," assumes a static view of the facts; it postulates that a large part of our railway plant and equipment is a given quantum, more than ample for present transportation needs.

But, as Dr. Lorenz and others have shown, when we take a longer period of time into view,—and surely economic policies should be based on long time considerations,—when we take into account our increasing population and wealth and transportation needs, we see that not only the cost of conducting transportation but maintenance costs and fixed charges too are increasing, and one item about as fast as another. From the long-time, social, point of view, fixed charges are apt to be variable charges.

Take, for example, the case of a railroad which finds that coal along its line can be profitably mined and sent to market if the rate is made high enough to cover the cost of conducting transportation and possibly to contribute its proper share to maintenance, but not high enough to contribute an appreciable amount towards fixed charges. Such a rate is made; coal traffic is created; this coal traffic increases; other sorts of traffic increase; the single track becomes congested; ton mile costs increase; then the road issues more bonds and builds a second track. A new burden of fixed charges has been caused by the increasing traffic, and the coal traffic is just as much responsible for the increased fixed charges as is any other sort of traffic. In short, this new burden of fixed charges has been created in large part on account of traffic which contributes little or nothing toward fixed charges.

I do not think this is an extreme case; at any rate it illustrates the point. We have sometimes made the mistake of looking for a direct physical or technical connection between traffic and costs rather than a causal relation. In the allocation of maintenance costs between freight and passenger service, for example, it may sometimes be proper to go beyond the responsibility for physical wear and tear to ask which sort of traffic sets the standard of maintenance on a particular road.

I do not mean to say that the cost principle will solve all questions of classification and of rate making. There are many rail-

roads on which we have no reason to expect such a growth of traffic as will lead to new capital expenditures; on such roads the principle of charging what the traffic will bear is, within limits, justified. So also for a large class of considerations, of which the case where the natural balance of the traffic is in one direction or the other is typical. Then, when a number of roads serve the same through points, the cost standards to be used are those of the strongest and most efficient roads. The weak roads will have to be permitted to meet the rates set by the standards of the best. Again, there are those various considerations of public policy which Commissioner Meyer has characterized so clearly.

And, finally, there is the fact that the gradual modification of our existing rate system presents a problem even more complicated and difficult than that of the gradual reduction of a highly protective tariff. The nice adjustment of advantages, the balancing of competing interests, is the most characteristic feature of the existing rate system. If the cost principle is to be consistently introduced, all this delicately balanced system must be disturbed. The task is made somewhat easier, I think, by the fact that the wholesale and jobbing interests, which are of all business interests most sensitive to rate conditions, do not usually involve either a large investment of fixed capital or a large employment of labor, and may be gradually shifted in response to changing rate systems without serious shock.

I have taken account only of the general economic basis of rate making. A number of practical considerations also point in the same directions. I can mention only two:

1. There seems to be no question but that under existing tendencies of regulation, cost (that is, aggregate cost, including a fair return upon the investment) will be taken as a measure of the justness of the general level of rates,—that is, of average rates. Moreover, under present judicial interpretations of the Fifth and Fourteenth Amendments, cost sets a limit beyond which important classes of rates cannot be forced by public control. You can't have an average where all of the important items are either above or at the average. In short, under present judicial decisions any other basis of rates than cost is inconsistent with the control of the general level of rates.

2. Unless the powers of the Interstate Commerce Commission are so increased as to take away from the individual states the power of virtually determining interstate rates, conferred upon

them in the Minnesota rate decision, there must be some fundamental standard of rate making if we are to have any but a chaotic system of rates. A system of cost allocation, worked out by the Interstate Commerce Commission and approved by the Supreme Court, would become of necessity a uniform standard for both federal and state rate control, and would lead to eventual harmony in rate systems, even under a divided system of control.

In conclusion let me make it clear that I am not claiming that the cost-of-service principle should be used as the invariable yard-stick of rate making. But neither should it be counted only as one among a myriad of factors affecting rates. It is, in my opinion, properly to be regarded as a first principle of rate making, departure from which is to be justified only by the special circumstances of the individual case.

ERNEST R. DEWSNUP: If the production of the services of railway transportation were carried on under conditions of perfect competition, mobility of capital and labor being complete, there being no deterring factor of limitation of land; if the various services of such transport were, in the essence of their production, disjunctive, not conjunctive, the normal price of each service would be determined by its normal cost of production. Under the accepted theory, the prices thus realized would contribute a maximum amount to the national dividend. If our hypothesis typified actual conditions accurately the problem of the governmental regulation of railway rates would be much simplified. As Dr. Meyer remarks in his paper, competition is capable of producing better results than the best regulation.

But limitation of land, monopolistic restrictions, intervene. Still, it might be argued, maximum advantage would be secured by a method of regulation that would bring about an adjustment of rates to costs as they would be under conditions of perfect competition. But a practical difficulty appears. As Edgeworth has urged, if freely competitive conditions do not exist, and cannot be made to exist, how are we to determine the cost of production that would have been associated with competitive freedom? And can we assume that rate regulation based upon the actual costs, if ascertainable, will consummate maximum advantage? Even Pigou admits that "anything in the nature of exact imitation of simple competition is almost impossible to attain". Grant that the difficulty is a technical one, nevertheless it inter-

fers materially with the hope of satisfactory regulation based upon the theory of price as it applies under conditions of perfect competition.

A further consideration has to be borne in mind. No longer retaining the hypothesis of complete mobility of capital and perfect competition, it is possible to argue, perhaps, that a railway which could not be made to pay at non-discriminating prices based on cost of production should not be built at all,—that the investment of the capital would be better applied elsewhere. Assume that discriminatory prices were prevented for a period of considerable length by effectively enforced statutes, the mere presence of the railway and its facilities, though operated at a current loss, might readily bring about an industrial development ultimately capable of contributing to the national dividend an amount more than compensating the loss incurred during the period of development. Only on the theory that the economic territory of a railway operating under non-discriminating rates would not and could not secure a future development sufficient to compensate the temporary loss could one agree as to the economic undesirability of such a railway.

If it is possible then that the non-discriminating railway might bring about economic benefit even under these restrictive conditions, is it not to be granted that such benefit will be all the greater if, during the period of development, the railway could be made to pay its way with the aid of a discriminating tariff?

Such a consideration may be of no ultimate significance, but there can be little doubt that for many years to come it will continue to be of great practical importance to most of the roads in both the East and West of this country.

Actually, the railways of very few countries, if indeed, of any, can be regarded as pure monopolies. Certain monopolistic elements enter into their position as producers and sellers, variant in degree with the particular economic environment of individual railways. But that competition also enters in, it is absurd to deny. It may be that, in cases, the direct competition of territorially adjacent lines is not now conspicuous, though it is not altogether dead, but there are but few instances in which the indirect, perhaps less conspicuous, but nevertheless mighty force of regional competition, ramifying in all directions, stretching out even into the recesses of so-called local traffic, does not exercise a powerful influence. In so far as limited monopoly is the only conceivable

régime under any actual conditions, whether private or public administration of railway operation happens to be the method of management, it would seem that principles of rate regulation based upon the concept that maximum advantage is secured under complete monopoly by such adjustment of price to the cost of production as would result under perfect competition can hardly be relied upon as certain guides. Indeed, in spite of theoretical acceptance of Pigou's thesis, Edgeworth feels himself forced to the conclusion that, under the actual conditions of limited monopoly, discrimination, accompanied by a moderate regulative control, is likely to be better both for the customer and the monopolist than monopoly forbidden to discriminate.

But, after all, are varying rates simply the result of the exercise of the discriminating powers of monopoly? For the purposes of theoretical discussion, it is doubtless unnecessary to consider the effects of joint cost when, as with Edgeworth, a theory of monopoly, or, to be more precise, of restricted monopoly, can be made to harmonize such discriminations with general advantage. Yet it is as well to remind those who fear such statements with regard to monopolistic price making that if monopoly were not effective the presence of joint cost would favor price or rate discrimination; that where joint cost prevailed, uniformity of price could only result in those accidental cases in which the demand schedules of those that sought to purchase the joint products were alike.

With Taussig, most economists have been inclined to accept the phenomenon of joint cost as peculiarly characteristic of railway transportation and as preventing a satisfactory explanation of much of the variation in railway charges. Recently, however, Pigou has pronounced it most improper to take this point of view, which is based, he thinks, upon a totally wrong conception of the nature of railway transport: ". . . the carriage of tons of different things from A to B," writes Mr. Pigou, "is a single homogeneous commodity on precisely the same footing as plain cotton cloth. The fact that some 'carrying of tons' is sold to copper merchants and some to coal merchants does not imply that two different services are being provided, any more than the fact that some plain cotton cloth is sold in England and some is sold abroad implies that two different commodities are being provided. For, the fact that one sort of thing is sold for two purposes, or to two different groups of people, does not turn it

into two sorts of things. There remains one sort of thing and one only. Joint supply, however, implies the presence of at least two sorts of things; since, obviously, no commodity can be supplied jointly with itself. Hence, not only is it proved that jointness is absent in fact from the case in hand, but it is proved further that its absence is a logical necessity. The popular acceptance of the contrary view can only be due to the fact that we happen to speak of ‘transport of copper’ and ‘transport of coal,’ instead of speaking of transport sold to copper merchants and transport sold to coal merchants. An accident of language has caused an important field of economic inquiry to be dominated by a doctrine which is essentially unsound.”¹

The argument would seem to rest on the assumption that the act of transportation is simply that of conferring place utility and therefore that variations in rates are, in general, not to be justified unless based upon differences in the distances over which the acts of transport are operative. But a place utility is surely not measurable merely by geographical distance. The production of place utility by transferring commodities from X to Y may require varying proportions of capital goods and labor per unit of transportation produced, may involve differences in business risks, and may demand diverse degrees of managerial skill. In so far as this is the case, acts of transportation are heterogeneous, not homogeneous.

Of course, the mere fact of heterogeneity of product does not establish the presence of joint cost. In fact, if the conception of joint cost had to be restricted to the definitions given by Mill or Marshall, it could not be applied, in any important degree, to the case of railway transportation. To quote the latter economist, “When two or more things are produced by one and the same process so that the expenses of producing them all together are not greater than the expense of producing one of them alone would be, then these things are called *joint products*.” But may not this be regarded as but a sub-case of joint production, which the present writer would be inclined to define as existing whenever the total costs of production of two or more commodities produced together by a single plant are less than the sum of the costs of their separate production by separate plants. Of course, the cost of separate production would limit the price at which the jointly-produced commodities could be sold, but, under free compe-

¹Wealth and Welfare, pp. 216, 217.

tition, the collective normal value would be equated with the joint expenses of production, which, by hypothesis, would be less than those of separate production, and the individual prices would actually be determined, subject to the restriction noted, with reference to the relative intensity of the demand schedules. If this premise be accepted, then the applicability of joint cost to the production of railway transportation extends far beyond those cases of back-loading, unused traffic capacity, etc., to which, or less, Mr. Pigou would restrict it. In so far as the fact of joint production would prescribe important limits to the application of a standard of cost of production under conditions of free competition, to that extent is the argument for the regulation of existing railway rates by pure cost standards weakened, resting, as it does, upon the theory that maximum advantage would be secured under the particular monopolistic conditions of the railway by the reproduction of the prices that would prevail under perfect competition; namely, those equated to cost of production. Under such free competition, could it prevail, railway charges would not be determined individually by cost of production, though a certain limiting influence is not denied, but would be adjusted to an appreciable degree with regard to the varying intensities of the differing demand schedules. Of course, no individual rate would, in the long run, fall below the level of those marginal expenses which could be specifically associated with the transportation of the commodity to which the rate applied.

Any argument for cost rates based on the theory of pure monopoly ignores the fact that, in discussing railway rates, we are not dealing with the price making of a pure monopoly; that, allowing for errors of judgment in the estimation of advantage, the railway entrepreneur is sooner or later induced by the size of his investment in immovable capital goods, by the attribute of continuity that attaches so strikingly to his enterprise, to consider future as well as present interests; that, even if junction competition disappeared entirely, regional competition would not do so; and that, as past history shows, though faint and irregular in action, altruistic influences, a sense of responsibility to the community, do exercise an ameliorating effect upon the railway entrepreneur, capable of stimulation, undoubtedly, by discreet and restrained governmental control. So quite apart from the question as to the degree to which joint costs characterize railway transportation, I feel myself forced to agree with Prof. Edgeworth

that the actual conditions argue greater advantage to the community from moderately controlled discriminatory rate making than from a non-discriminatory system.

FRANK HAIGH DIXON: My friend Dr. Meyer has somewhat disappointed me by going into the Economic Seminary room and carefully closing and bolting the door, for it seems to me that this is very much of a street-corner topic which should be discussed freely in the open and submitted to a severe pragmatic test. However, I take comfort in the fact that he has, as his paper clearly shows, carried with him into the sanctuary all his wealth of experience in practical rate making and that the "considerations" that he has so clearly offered us are the direct outcome of this experience.

If discussion means criticism, I ought not to take the time of this meeting, for there is little if anything in the general attitude here expressed with which I cannot agree. If, after all factors are considered, there is, as the writer maintains, still room left for a "wise discretion," the fundamental principle for which the most determined opponents of the cost theory are contending is here conceded. But I do not count myself among the number of the irreconcilable enemies of the cost theory. It has always been recognized that cost is a minimum below which rates should not go; to this extent they have employed the cost theory, yet railways have had only a most general idea of what their specific costs for specific service actually are. Moreover, the railways have deprived themselves of their right to object seriously to any attempt to investigate general costs, for frequently in rate cases they have themselves employed the cost method to justify an increase or to resist a decrease. Elaborate cost studies have been made from time to time, notably in the application now making to Congress for an increase in mail pay. Distribution of expense between passenger and freight and between state and interstate business, which is cost accounting in the rough, has from time to time been made in connection with state litigation covering rates of a special class. Speaking generally, I feel that a more complete and accurate knowledge of costs than railways now possess would be beneficial both to them and to the public,—beneficial to them because it would, I am convinced, reveal many instances where service is performed at a price less than the out-of-pocket expense and many other instances where specific rates long in existence,

established under other conditions and for other purposes, are so greatly out of line that they should be adjusted to the prevailing standard; beneficial to the public because it would contribute just this much more aid to the solution of a problem which needs, in order to be rightly solved, every possible bit of available information.

In the new annual report form which the Interstate Commerce Commission has under consideration, there is provision for the assignment of the expenses of operation between passenger and freight service, first, of those expenses occasioned solely by either service and, second, of those expenses occasioned jointly,—the latter to be apportioned according to the rule now followed by the reporting railway, the rules for effecting such apportionment to be furnished with the report. The object of asking this information is to discover whether the railways are at all in harmony in their methods of apportionment as employed in their own offices and whether from their experience rules of apportionment can be drawn and officially promulgated by the Commission. Whether this proposed schedule is a reasonable requirement on the part of the Commission depends, in my opinion, upon how far and into how much detail the Commission eventually goes in its demand for information and the use to which it is to be put.

The parallel that Dr. Meyer draws between cost accounting in industry and cost accounting in railroading seems to me not altogether a close one. The manufacturer controls to a degree his own price in that his price is not usually determined by an outside authority. He produces a commodity that he can store and can withdraw from the market if the price is unsatisfactory. The railway sells a highly perishable commodity and no longer has any control over its price. Manufacturing industries differ widely in the elaboration of detail to which cost accounting has been carried, and many have found that the assignment of overhead charges to output requires methods so arbitrary as to make the results of little value. If the problem of assigning fixed expense is difficult in a manufacturing industry with an output consisting of relatively few items, how much more complex the problem of the railway manager with the thousands of items of output, how much more arbitrary the rules of assignment, how remote the actual connection between cost and price. To be sure, many of the best managed railways have for years made arbitrary assignment of expenses to the various services performed, and it is

quite possible that they have hit upon the same percentage in many cases, but the results have had little if anything to do with rates. These computations have been of value to them not because they have furnished exact information for any one year, but because, being worked out in the same manner year after year, they have had a comparative value as a rough test of operating efficiency, and it is for this purpose alone that they have been employed. To make them the actual basis of a rate schedule would be thoroughly unscientific, whether it resulted in an increase or a decrease in rates. If, therefore, the Commission contemplates using its new information for anything more than a most general aid in rate determination, I should feel that it was proceeding in a direction that, to say the least, was undesirable. But if this new accounting requirement is only to throw additional light on the problem, then it seems to me the demands on the railways in the matter of additional accounting should be carefully limited. It is common, I know, for railways to use expense as their cry of wolf! wolf! whenever any new proposal is made, and certainly the expense in this case would be no inconsiderable item. One road with which I am familiar is at present spending \$10,000 per week in making separations of expenses for a pending state case. But, of course, the matter of expense in and of itself is no argument against it; if the people as represented by the Commission want it done, it will be done, and the people will pay the bill. My point is that in this age of scientific management we should seriously consider whether the expense involved is justified or whether we are spending five dollars in order to get thirty cents.

But, as I said at the beginning, I am in agreement with the general reasoning of this paper. I believe in the physical valuation movement and I believe that in determining what should be a fair return to railways we should look to capital value and not to outstanding securities. I believe that as traffic becomes denser we shall more and more steadily approach the distance principle in rate making. I welcome any information concerning cost of service that can be secured without disproportionate expense as providing assistance to the rate-maker, whether railway or governmental authority, but I welcome most of all the statement of Dr. Meyer that after every possible consideration is taken into account there will still remain "a wide zone within which to exercise 'the flexible limits of judgment.'" And this exercise of wise discretion is not a matter of guesswork or of intuition, but

grows out of a long period of arduous study of the problem and is the product of a highly expert mind trained to grasp the bearings of this intricate question. In our very able Commission at Washington we have no one who better fulfills these requirements than our distinguished fellow member who has presented the paper this morning.

ARTHUR J. BOYNTON: As in times past, these, also, are difficult days for the producers of time and place values. Unless characterized by monopoly features the producers of form values seem to fare much easier. As Martin Luther remarked in his famous sermon on Trade and Usury that "merchants can scarcely live without sin," so today even, the middlemen, the speculator, and the agencies of transportation are put on the defensive to reveal the workings of their ways and are called upon to demonstrate just why this or that policy is pursued in the performance of their functions.

The methods and operations, costs and what not of producers of form values are readily, or at least fairly, comprehended; they are generally *seen*; while the services of producers of time and place values are generally *unseen*—that is, less readily understood. It is primarily for this reason, I am disposed to believe, that the latter are called upon, often with elaborate complexity of theory, to justify the charges made for the services, real or imaginary, which they are supposed to render. If the public cannot readily grasp the complexities of modern transportation charges, very naturally, and often rightly, it infers that injustice is being done. As a consequence an explanation or a theory, if you please—often a conflict of theories—appears to justify or condemn such practices.

There has been developed during the past generation or so a body of economic reasoning pertaining to the charges for transportation, not one theory, but many theories, accepted more or less according to the interests involved. The cost of service, the value of service, the value of the commodity or taxation theory, joint cost, capitalization, valuation, and various political theories all have held their time and place, and to these may be added—for lack of a better term—the "single homogeneous commodity theory." The persistent conflict of these theories often leads one to raise the question whether or not we actually have today any real recognized theory at all applicable to railway charges. A

theory which but partly answers our purpose, and to which but a limited amount of consideration *must* or *can* be given, can hardly be called a complete theory. Something more must be added.

On the other hand, if each and all of these theories are to be accepted; if each furnishes but a partial rule of action in the determination of fair rates; just what shall be the "due consideration" given to any one or to all of them? Unless this nicety of adjustment can be shown and made practicable; unless we can discover the weight which shall be given to the various considerations urged by each of the above mentioned partial theories; then just so long is it useless for us to content ourselves with the thought that we have any real theory of rates deserving the name. The personal judgment of regulating bodies must satisfy us and the rule-of-thumb must prevail.

While the railways cling to charging what the traffic will bear, or some other of these partial theories, and can discover little or nothing applicable in the others; while the public insists that greater emphasis shall be placed on costs of service; while engineers and efficiency experts claim much for construction and operating accounts; and commissions advance the schemes of enlightened public policy; so long, I repeat, are we far from realizing a vital theory and a rule of action. What is needed seems to be an amalgamation of the theories which we already possess, with such additions and adjustments as the future may reveal. But in spite of the necessity for it, are we prepared, as yet, for such a consolidated theory, a theory which shall weld into a composite whole the elements of truth discovered in each of these partial theories? I may venture the opinion that these so-called partial theories are not sufficiently refined at present to make safe and expedient their incorporation into a unified theory. What, for instance, do we really know about the cost of service, or the value of service, or the relation of valuations to what charges should be? Have we, as yet, any units deserving the name by which we can apply these tests of reasonable charges? In the face of the need of a *real theory*, a composite theory, if you please, deserving the name, we can only hope that this refining and amalgamating process will continue.

With the completion of the valuation of railways, for example, and the experimentation with the data which will probably follow, it will remain to be seen just what "due consideration" can be given this particular contribution to our composite theory.

The demand today, then, is for a refining of the theories we already have and a fusing of them into a real workable theory of rates. Such being the case, the real and immediate work before us seems to be the determination of satisfactory units. Cost of service, value of service, and similar expressions, are empty phrases unless we have some idea of their content, or possess some units for measuring the same. In this connection we are promised, for instance, great things in the recent growth of cost accounting. All this is very encouraging, for what is needed are adequate records on costs of service, that from these units may be derived. May we not be disappointed! Standards, also, are required for determining the value of service. Do we have them? Can they be secured? With no settled policy, with no fixed standards, with no segregation of units, what headway can be made? Have we any revenue or cost units which can be used, for example, for comparing the passenger and freight traffic of any one railroad, not to mention a comparison between one railroad and any railroad group? The "common denominator" expression is readily used in a theoretical discussion, but can it be *found*, and if found, what value, for practical purposes, will it possess?

Once having these units and standards, if perchance they may be determined, how shall they be used and what consideration or weight shall be given to each in the final adjustment of a reasonable rate? An answer to these questions seems to be the contribution necessary in order to evolve a real theory of railway charges.

Finally, in giving use to many theories and the units incident thereto, the all important considerations of joint cost, the elements of monopoly or competition in the service, the necessity of flexibility and elasticity for charges, the variations in costs and maintenance, the heterogeneity of the traffic, and the conflict between interests, must all be borne in mind; at the same time not overlooking a theory of rates which will give consideration to the adequate financial needs of the corporations for the future.

So far, then, as our theories are concerned, let us find, if possible, some measure or yardstick for determining their application, and if they seem to be in conflict let us endeavor to harmonize them and give to each its due consideration. And while we are attempting this, let regulative bodies continue their investigations; let the state give the greatest publicity to financial operations and also insist upon a continually improving quality of service. But

let us in the meantime never forget that statistical study must precede rate theories, and that many theories, or any one of them, without their proper unit records and determined standards, will furnish but a meager basis for regulation or for the exercise of that judgment so essential thereto.

LEWIS H. HANEY: The thesis of the leading paper appears to be this: a cost basis for railway rates is not only theoretically sound but also quite practicable,—though it may be desirable to modify this basis somewhat by the so-called principle of public policy. With this thesis I am in substantial agreement, subject to modifications to be mentioned in a moment. Five years ago, as a special examiner for the Interstate Commerce Commission, I noted that many important lines go much farther in the use of cost accounts and statistics than the anti-cost theorists would deem practicable; and I am convinced that we only need perfected accounts and more interpretative statistical data to enable us, not, indeed, to make "joint costs" directly and specifically assignable, but to make them logically and rationally so.

Two main questions are raised in my mind by the paper,—questions which, though old, must ever be reanswered: (1) What is meant by the value of the railway property? (2) Is there any conflict between the cost basis and public policy? As to the first question, I note that, among other meanings, "value" may indicate either "market price" or "cost price." If the value of the property be taken to mean the former, there is obviously danger from the logical whirlpool that sets in when rates are allowed to enter the determination of rates; for is the market value of the property not partly determined by the income from rates? This could be called a "cost basis" only in a private and individual sense. To the railway director, railway capitalization stands as a liability and the interest on funded debt as a "cost"; but to the public, the actual investment, or expense of labor and materials, is the cost. If, however, the value of the property be taken to mean a "cost price," we should merely be using that value as one element in a cost basis for rates. We should learn the cost of the property (whether "original" or "reduplication") so that interest charges could be directly determined and distributed. This seems to me the only satisfactory interpretation of "value" to be adopted here, and is the one meant by Commissioner Meyer, I presume.

This first question suggests a similarity between railway values

and land values. Land being subject to private ownership, we allow land values to be based upon income (rent), and "unearned increments" and "differential gains" are allowed to accrue to private persons. But railways are affected with a public interest, and the question arises, should they be allowed to include in their values unearned increments and differential gains? If the straight cost-value idea were adopted, no price-determined surpluses would be included in the basis; but none but the least costly lines between any two points could be profitably worked. Practically it would be necessary to adopt something like the marginal-cost idea, and that would allow differential gains to accrue to supramarginal roads. It seems expedient that these gains should pass into the hands of the railways and then, on the ground of the railways' public function, be taxed heavily,—perhaps not so heavily, however, as to remove the stimulus to choose the cheapest construction. I believe that much remains to be done in applying the marginal analysis to the determination of railway values.

As to the second question, it is my conclusion that no conflict exists between a cost basis and the so-called "principle of public policy,"—at least not in the beginning. To ignore costs means much more than throwing rate making into politics. It means economic waste on a gigantic scale. It is specious to urge that coal, sand, and other low grade commodities could not move at cost rates. By what right is their low price assumed? Ordinarily, if a good could not bear the transportation charges from A to B on account of its low price, the price at B would have to rise. Is it expedient, then, that the railways, backed by the government, should take it upon themselves to supply goods at less than cost? Where would it stop? If the public-policy basis means anything different from the cost basis, it means that goods would normally be hauled for less than it would cost, and that railways would be maintained that normally could not pay. Of course, short-time initial losses incurred for the purpose of putting traffic on a paying basis within a reasonable time would not be inconsistent with a cost basis. In the long run the only way to prevent wasted energy and natural resources is to let competitive prices determine. This is the law of comparative cost applied to railway tariffs. As a practical matter, particular exceptions have to be made in cases of vested interests and emergencies, but these cases should frankly be put on the ground of charity, just as we provide poorhouses for those who can not pay for their own subsistence. Public policy,

as distinct from cost, merely makes exceptions. It does not furnish a rule for rate making. It is—is it not?—an end, or goal, not a means.

Thus far, I have confined myself pretty strictly to issues directly suggested by the leading paper. If I may venture to make an additional point, I will say that I believe that the whole problem which confronts us is to fix rates as they would be fixed under normally competitive conditions, and that to do this satisfactorily we must bring to a synthesis several of the fragmentary, partial theories which now engage our attention. These fragmentary theories are the result, I take it, of past misunderstandings. It has not been long since the average man in his heart believed that railways could compete, and few men fully realized the extent of the railway's public character, to say nothing of the significance of the doctrine of joint cost. Born of this confusion, or these confusions, naïve cost theories have jostled incomplete value-of-commodity theories and fought with question-begging value-of-service theories. But now that the ground has been cleared and the true economic nature of the common carrier established, the time is ripe for a coördination and a synthesis. It is true that competition can not obtain in the railway field, but that does not mean that the forces of demand and supply are not operative there. Why, then, not set out to solve the problem of constructing a rate yardstick by the demand and supply route? It is a block-signalled, rock-ballasted road, lined with venerable classic scenery. Do you hesitate because competition is lacking? It is not competition, as such, that makes the demand and supply road safe. The only validity that demand and supply analysis ever has depends, logically, not upon competition, but upon the number of exchanges that take place. We validate the working of demand and supply on the ground that their equilibrium gives the maximum number of exchanges. Then, taking for granted railway monopoly, why not seek to approximate the effect of competition on rates by constructing schedules of shippers' demand prices and carriers' supply prices? Here, of course, the difficulty of joint expenses arises. (And we cannot directly assign the total of a railway's costs. The schedule of carriers' supply prices can not be simply determined.) We must seek a rule for determining the portion of joint expense that each class of traffic would bear under competition. This is the heart of the problem.

At the outset we may gain some comfort because, in the first

place, the arbitrary private discriminations that formerly accompanied the scramble among shippers to gain exemption from their due share of joint costs is being eliminated; while, in the second place, improved accounts and statistics are narrowing the joint field and giving more accurate bases for work.

It remains, then, to determine normal demand and supply curves in which joint costs are rationally assigned, and to put them together. On the one side, we have as the fundamental fact the utility of the transportation service to the shipper. This primarily depends upon the difference, not between actual *values*, but between "supply price" (seller's estimate) at the point of origin and "demand price" (buyer's estimate) at the point of destination. This we may call the distance utility of the service. But the utility of the service also depends somewhat upon the value of the commodity and the trouble of handling it, which may be combined and termed its specific value,—value in a given bulk. We therefore have to combine the "distance utility" of the service with the "specific value" of the commodity to get the total utility of the service and determine the final or specific demand curve. It will be observed that we have thus synthesized all that is true in the value-of-commodity and the value-of-service theories.

On the supply side, we have a larger or smaller minimum of "specific costs" that can be directly assigned in each case. To this we must add a larger or smaller amount of joint cost (including interest on the cost value of the property), and I would propose that this be done accordingly as the "specific demand" indicates that it can be borne. This is the way it would be done under competition. It is the truth in the what-the-traffic-will-bear theories.

Thus, proceeding from a recognition of joint expenses, we arrive at a basis of rate making which recognizes elements of truth in various theories, and which, while estimating costs as a supply-limiting force, also takes demand forces into consideration. It is not, however, a group of separate yardsticks from which to choose according to whim, but it is one composite principle that can be applied in all normal cases, the uniformity lying in the rule, the variety in its applications. It is based upon the fact that demand and supply are the ultimate forces, however joint and composite they may be. It gives us the result that these forces would work out under fair competition if railways could compete.